

## **THOROUGH UNDERSTANDING OF FOREGROUND AND BACKGROUND ECLIPSING BINARY STAR POPULATIONS OBSERVED BY KEPLER**

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The proposal emphasizes the importance of eclipsing binary stars observed by Kepler. Background eclipsing binaries are the leading source of false positives and a thorough analysis is required for planet transit validation. Studying the statistical distributions of the eclipsing binary periods, amplitudes and principal parameters allows a direct comparison with planet candidate distributions and hints to similarities and fundamental differences between the two types of systems. I build a case for the continued detection, classification and characterization of binaries in the Kepler field. In particular, I derive preliminary results from the first and the second EB catalog release and show that the observed distributions are in remarkable agreement with the distributions derived from the Besancon model of the Galaxy. I demonstrate that the published list of planet candidates by Borucki et al. (2011) is likely only marginally contaminated by false positives. I discuss the plans to look for circumstellar and circumbinary planets via transit and eclipse timing methods, and present other aspects of my involvement in the Mission that could substantially contribute to its success and be realized through this proposal.